

Claims

- [c1] What is claimed is:
- 1.A method for assigning a downlink radio frequency to a transmitter of a radio port served by a radio interface (RIF) board of a radio port control unit (RPCU) in a frequency-reusing radio communications system serving a plurality of subscriber units, the frequency-reusing radio communications system having a plurality of radio frequencies, the method comprising:
 - (a)tuning a receiver of the radio port to a radio frequency;
 - (b)measuring a received signal strength of the radio frequency;
 - (c)comparing the received signal strength of the radio frequency to a predetermined threshold value; and
 - (d)assigning the radio frequency as a downlink radio frequency of the transmitter of the radio port if the received signal strength of the radio frequency is less than or equal to the predetermined threshold value.
 - [c2] 2.The method of claim 1 further comprising:
 - (e)repeating (a) through (d) for other radio frequencies until a downlink radio frequency has been assigned in (d) to the transmitter of the radio port, and increasing the predetermined threshold value by a predetermined amount if all of the plurality of radio frequencies have been compared in (c) and a radio frequency has not been assigned in (d) as the downlink radio frequency of the transmitter of the radio port.
 - [c3] 3.The method of claim 2 further comprising:
 - (f)queuing radio ports that request a downlink radio frequency assignment; and
 - (g)repeating (a) through (e) for each queued radio port after a first delay until the queue of radio ports is empty.
 - [c4] 4.The method of claim 3 wherein the queuing (f) is performed on a first-in first-out (FIFO) basis independently for each of a plurality of RIF boards.
 - [c5] 5.The method of claim 3 wherein the RPCU controls (f) and (g).
 - [c6] 6.The method of claim 2 further comprising:
 - (h)identifying radio ports that are not being used by a subscriber unit; and

(i)repeating (a) through (h) after a second delay for all radio ports that are not being used by a subscriber unit until every radio port has a downlink radio frequency assigned in (d).

[c7] 7.The method of claim 6 further comprising:

(j)repeating (h) and (i) a predetermined number of times.

[c8] 8.The method of claim 6 further comprising:

(k)repeating (h) and (i) until no transmitter of a radio port is set to a new downlink radio frequency for a predetermined number of consecutive repeats of (h) through (i).

[c9] 9.The method of claim 6 wherein in (h) and (i) the plurality of radio ports is cycled through in a sequential manner.

[c10] 10.The method of claim 6 wherein the RPCU controls (h) and (i).

[c11] 11.The method of claim 1 further comprising:

(j)turning off the transmitter of the radio port while performing (a) through (d).

[c12] 12.The method of claim 1 wherein (d) further comprises assigning an uplink radio frequency to another receiver of the radio port.